PULP & PAPER

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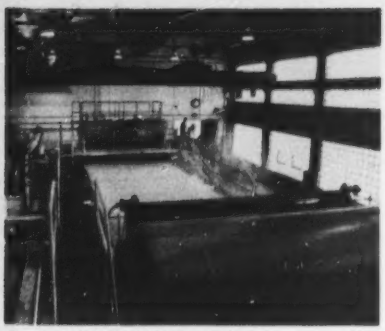
ABP BPA



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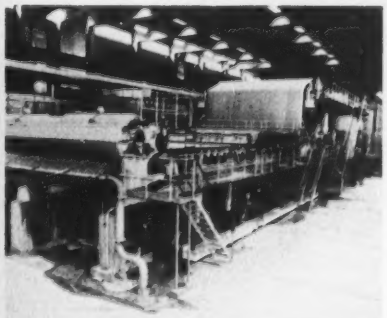

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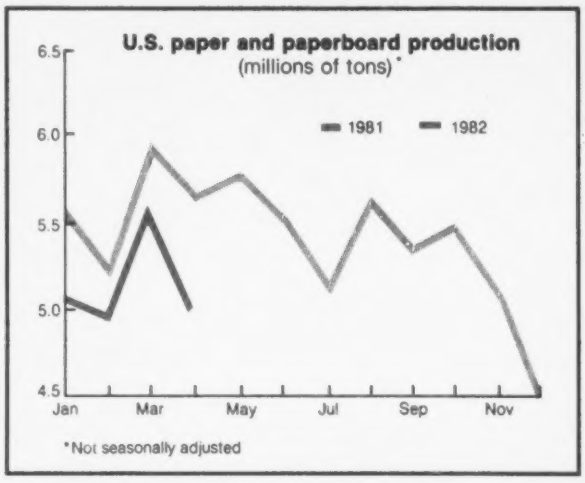
MONTH IN STATISTICS

U.S. paper and paperboard production in April totaled 5.0 million short tons, 8% below April 1981 levels, according to the American Paper Institute. Adjusted for seasonal and workday factors, the April rate of production came to about 59.6 million tpy, reversing the rising trend in production evident in February and March.

Among major grades, only newsprint and tissue production made gains over year-earlier levels. For the first four months of 1982, newsprint was 5.5% ahead of year-ago, while tissue edged up about 0.6%. Production of printing/writing grades averaged about 3% below year-earlier levels for the four-month period. All major grades of paperboard were below year-ago levels in production for the January-April period, with declines ranging from 6.5% for recycled paperboard to nearly 10% for semichemical medium. Unbleached kraft linerboard production fell 7%.

Total Canadian newsprint shipments in April came to 703,000 metric tons, down 10.1% from April 1982, according to the Canadian Pulp & Paper Assn. Newsprint mill operating rates slipped to 84% in April from 91% in March and 98% a year earlier. Year-to-date rates came to 92%.



		Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	April	437	1.4	5,320	5.5
Uncoated groundwood (s)	April	119	−6.3	1,381	−6.3
Coated paper (s)	April	398	−1.7	4,885	−1.8
Uncoated free sheet (s)	April	625	−11.0	7,859	−3.0
Unbleached kraft packaging and industrial (s)	April	288	−17.5	3,797	−7.6
Tissue	April	380	2.2	4,519	0.6
Total paper	**April**	**2,492**	**−6.4**	**30,902**	**−2.1**
Kraft linerboard, unbleached	April	1,145	−12.1	13,918	−7.5
Semichemical medium	April	370	−9.5	4,472	−9.9
Bleached paperboard	April	316	−5.4	3,745	−7.2
Recycled paperboard	April	562	−6.3	6,819	−6.5
Total paperboard	**April**	**2,475**	**−9.9**	**30,047**	**−7.4**
Total paper and paperboard*	**April**	**4,968**	**−8.2**	**60,948**	**−4.8**
PULP, WASTEPAPER & FIBER[2]					
Total woodpulp production	March	4,597	−1.0	51,444	−2.3
Market pulp production	March	536	−1.7	5,994	−4.3
Wastepaper consumption at paper/board mills	March	1,235	−2.1	13,818	−3.3
Pulpwood consumption (cords)	April	7,018	1.8	79,692	−0.8
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	April	19.941	−7.6	78.799†	−6.6
Containerboard inventories at box plants	Apr. 1	2,570	22.1		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	March	702	−6.5	7,841	−3.1
Imports of Canadian newsprint	March	603	−2.6	6,833†	−4.4
U.S. paper exports (including products)	March	408	−12.3	4,159	−13.9
Exports of unbleached kraft linerboard	April	153	−15.9	1,884	−5.3
Exports of woodpulp	March	319	−10.4	3,372	−9.0
CANADIAN STATISTICS[4] (reported in metric tons)					
Total newsprint shipments	April	703	−10.1	2,832†	−3.3
Operating rates	April	84%	98%	92%	97%
Inventories held by U.S. consumers	Apr. 30	1,632	24.5		
Woodpulp shipments (export only)	April	489	−21.8	1,959†	−17.6
Operating rates	April	75%	90%	83%	92%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fiber Box Assn., Paperboard Packaging Council. 4. Canadian Pulp & Paper Assn.
*Includes construction and wet machine grades. †Not annualized. ‡Not directly comparable to year ago because of coding change. (s) = shipments.

This column is based on recent research reports by six leading analysts on the outlook for the paper industry.

Delayed recovery seen for paper industry

The sluggish U.S. economy and delayed recovery in housing are causing most security analysts to again cut their earnings estimates for the paper and forest products industry in 1982.

While many analysts based previous forecasts on flat or slightly higher real GNP this year, most now look for a decline of between 1.0% to 1.5%. While earlier forecasts generally projected housing starts at between 1.2 to 1.3 million units this year, most analysts now project between 1.1 and 1.2 million units, with only 1.4 to 1.5 units in 1983.

Sluggish rebound. "Recent developments suggest a somewhat slower second-half upturn, with vigor of the rebound critically affected by how much interest rates are reduced from record-high levels, deficits are managed, and confidence is restored," said Thomas P. Clephane and Jeanne Carroll of Morgan Stanley. Added Gary Palmero of Oppenheimer: "Economic activity will be sluggish for the rest of 1982, as fiscal and monetary planners avoid reflation to rebuild confidence in the longer-term credit market."

With start of the economic recovery now moved back to the third quarter, most analysts look for between a 1.5% and 2.5% decline in paper and board production for all of 1982. With capacity continuing to expand, lower production is expected to result in operating rates in the 86% to 88% range and growing pressure on industry pricing.

"Capacity increases during the stop-and-go economy of 1979-82 have totaled 7.4%, while 1982 GNP should drop back to the 1979 level, and the FRP (Federal Reserve Production) Index in 1982 is projected to fall 5.8% below 1979," George B. Adler of Smith Barney, Harris Upham said. "As a result, 1982 operating rates in most of the important segments of the industry are declining to 85% to 88% of capacity, a historically poor level."

Most such forecasts are based on somewhat lower 1982 capacity growth than the 3.3% rise projected for paper and board in the last American Paper Institute survey. "Cyclical economic and financial pressures are forcing closure of aged, marginal units," noted Bruce Kirk of Goldman Sachs. "At the beginning of 1982, 600,000 tons were already closed; by year's end, we estimate another 1.2 to 1.3 million tons will be deducted from capacity data."

The slack market is intensifying pricing competition in the paper industry, where a 91% to 93% operating rate is usually needed to raise prices and improve profit margins. Palmero now only looks for a 3.6% average increase in prices this year, while costs advance 6.0%, "extending a classic profit margin squeeze."

"Weakness will be particularly noticeable in linerboard and related grades, where currently discounted prices approximate breakeven for a majority of industry producers," said Evadna S. Lynn of Merrill Lynch. "Although the paper segment of the industry generally has a brighter outlook, newsprint and coated publication papers are digesting large new-capacity additions and are less attractive."

1970-71 replay? Because price changes tend to affect paper industry profits more than production levels, some analysts wonder whether the current recession resembles the 1970-71 downturn, when production only declined 2.4% while profits dropped 43%. This contrasts with the more severe 1974-75 production downturn, following sharp price escalation after federal price controls were lifted, when profits declined "only" 19%, according to Adler.

While analysts late last year forecast either small profit gains or modest declines for 1982, most of the latest projections are for profit drops of between 20% to 30% for paper companies. While virtually every analyst was expecting a modest to sizable rise in earnings for forest products firms in 1982, most now look for between a 10% to 20% decline from 1981 levels, which were down sharply from 1980, which in turn were down from the 1979 peak.

What analysts are now projecting for the U.S. paper industry in 1982
(percentage change from 1981)

	Paper/ board production	Operating rates	Paper/ board prices	Operating profits
George B. Adler–Smith Barney	-2.5%	85%	n.a.	-25%/-30%
T. Clephane/J. Carroll–Morgan Stanley	-2.4	87	3.3	-25
Bruce Kirk–Goldman Sachs	-1.7	87	n.a.	n.a.
Evadna S. Lynn–Merrill Lynch	-4.5	83	1.3	-22
Gary Palermo–Oppenheimer	-1.6	90	3.6	-20
Mark Rogers–L.F. Rothschild, Unterberg Towbin	-2.8	86	2.4	-33

Recycled paperboard:
Weak demand, but lower fiber costs

Statistics:	1980	1981	1982e
Production, 000 tons[1]	7071	7001	6819
Capacity, 000 tons	8617	8593	8777
Utilization rate, %	82.1	82.3	77.7
Imports, 000 tons	22	30	33
Exports, 000 tons	249	174	134
Apparent U.S. consumption			
000 tons	6844	6926	6718
lb/capita	60.1	60.3	60.0
000 tons/$billion real GNP (1972)	4.62	4.59	4.52

1. American Paper Institute data

Grade structure: Recycled paperboard usually consists entirely of wastepaper, and is produced on both fourdrinier and multi-ply paper machines. Grades of recycled paperboard are generally classified into three categories: folding boxboard, setup boxboard, and paperboard. Most folding boxboard is clay-coated while most setup boxboard is uncoated. Recycled paperboard includes corrugating medium, linerboard, gypsum linerboard, and core, can, and tube stock; but it does not include any construction papers or boards.

Production/capacity: Production of recycled paperboard declined by just 1% from 7.1 million tons in 1980 to 7.0 million tons in 1981.

The packaging grades of recycled paperboard held up fairly well throughout 1981, according to American Paper Institute. Coated boxboard production increased 2.7%; tube, can, and drum stock, up 4.4%; and setup boxboard, up 2.1%. Demand for gypsum wallboard facings, however, declined, with production off by 21,000 tons—or 2%—and production for export off by 62,000 tons—or 74%. Total exports of recycled paperboard in 1981 declined 43.1% from 1980 exports of 249,000 tons, which was 40.7% higher than in 1979.

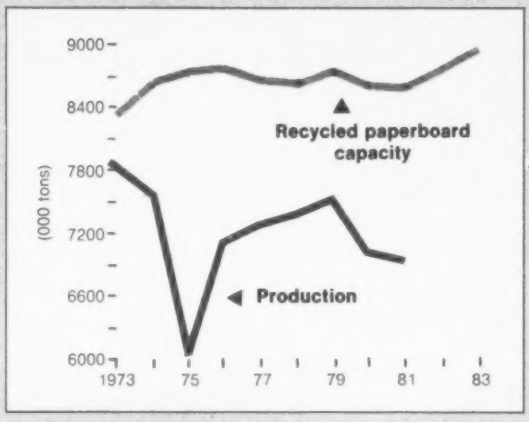
Recycled paperboard capacity, which has declined over the past decade, is expected to increase by 184,000 tpy in 1982. By 1985, total recycled paperboard capacity will grow by 352,000 tpy to 8.9 million tpy, unless 415,000 tpy of idle capacity is permanently shut down.

A recycled paperboard mill in Riegelsville, Pa., formerly owned by Whippany Paper Board Co., is scheduled to restart this summer with capacity expanded from 72,000 to about 135,000 tpy. Two other mills idled since Whippany declared bankruptcy in July 1980 were bought in June by a New Jersey real estate developer, but there are no definite reopening plans.

Outlook: Production is expected to decline from 7.0 million tons last year to 6.8 to 6.9 million tons this year and then to improve to 7.1 million tons in 1983.

Operating rates in recycled paperboard remained at about 82% in 1980 and 1981, and are expected to drop to 78% to 79% in 1982 and then start to increase in 1983 to 80% and reach 82% in 1984, analysts indicate.

Profitability of recycled board mills has been helped by a sharp drop in wastepaper costs, but these should begin to rise again when the economy recovers.



Estimated capacities of major U.S. companies are:

	Annual capacity (000 tons)	Capacity share (%)
1. Container Corp. of America	746	8.5
2. Sonoco Products Co.	555	6.3
3. National Gypsum Co.[1]	390	4.4
4. Whippany Paper Board Co.[2]	378	—
5. St. Regis Paper Co.	349	4.0
6. U.S. Gypsum Co.	347	3.9
7. Packaging Corp. of America	318	3.6
8. Caraustar Industries[3]	309	3.5
9. Newark Group	300	3.4
10. Federal Paper Board Co.	283	3.2
11. Alton Packaging	251	2.9
12. Rock-Tenn Co.	210	2.4

U.S. capacity (1981): **8.777 million tons**
Capacity share of top five companies: 27.2%[4]
Capacity share of top ten companies: 44.1%[4]

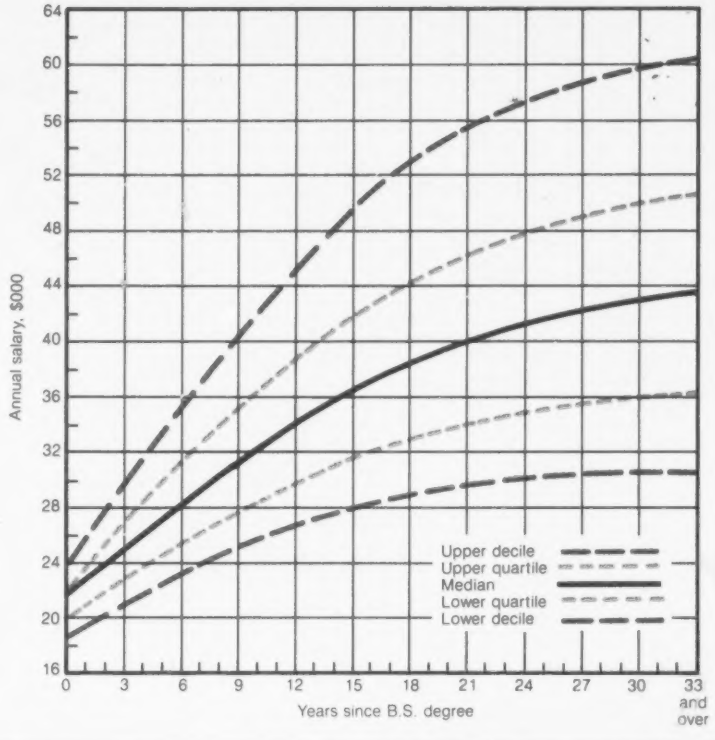
1. Includes Gold Bond Building Products, which the company bought in July 1981.
2. Does not include the Durham, Pa., mill, which was sold in 1981. Whippany's other mills, which have been idle since July 1980, were sold in June.
3. Holding company with ownership in Austell Box Board, Sweetwater Paper Board, Carolina Paper Board, and Carotell Paper Board.
4. Excluding Whippany.

Pricing: Clay-coated 20-pt folding boxboard (rolls) price history in $/short ton (year-end) is: 1975, $257; 1976, $262; 1977, $284; 1978, $305; 1979, $355; 1980, $400; 1981, $425; June 1982, $425.

Bending 20-pt chipboard (rolls) in $/short ton (year-end) is: 1975, $204; 1976, $212; 1977, $219; 1978, $225; 1979, $260; 1980, $275; 1981, $280; June 1982, $280.

Markets: Approximate market demand for the various recycled paperboard grades as measured by their capacity share is as follows: folding boxboard, 30%; setup boxboard, 4%; corrugating medium, 16%; gypsum linerboard, 15%; linerboard, 6%; container chipboard and filler board, 3%; and other paperboard, 26%.

Figure 1. **Annual salary of engineers in the paper and wood products industries since B.S. degree, 1981**



Paper industry salary hikes

By PAULA J. IRONS, News Editor

Table 1. **Engineers' median salaries by group**

Industry	1981 salary	1980 salary	% change
Petroleum	$39,200	$33,650	16.5%
R&D	36,050	28,850	25.0
Chemicals	35,400	33,750	4.9
Paper	**32,800**	**31,800**	**3.1**
Electrical and electronic	32,000	30,400	5.3
Construction and mining	31,850	30,100	5.5
Federal government	31,600	29,650	6.6
Aerospace	31,550	31,950	-1.3
Utilities services	31,550	28,550	10.5
Mechanical equipment	31,400	26,950	16.5
Design, consulting and engineering	29,300	29,050	0.9
Metals	28,900	26,800	7.8
Local government	28,150	25,250	11.5
State government	26,700	24,700	8.1
Average	**31,880**	**29,390**	**8.5**

Source: Engineering Manpower Commission

Complete salary data are published in *Professional Income of Engineers—1981*, which can be purchased for $35 from the Engineering Manpower Commission of American Assn. of Engineering Societies, 345 East 47th St., New York, N.Y. 10017.

☐ Engineers in the paper industry were paid a median salary of $32,800 in 1981, up only 3.1% over 1980 salaries and, like the salary hikes of most engineers in industry, below the 10.8% rise in the consumer price index from July 1980 to July 1981. Paper industry engineers were paid more than the average for 14 major industry groups, however, estimated at $31,880, according to the Engineering Manpower Commission of the American Assn. of Engineering Societies.

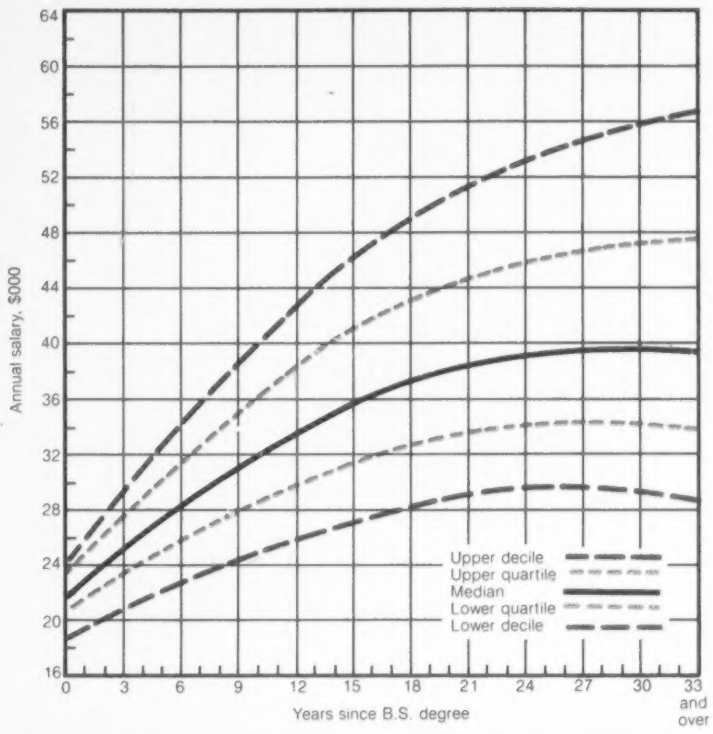
The commission's report, published on a yearly basis beginning in 1981 (previously published bi-yearly) surveyed companies, agencies, and other establishments representing over 153,500 engineers. The results of the survey are based on data gathered between February and May 1981.

Salary figures refer to base salary paid by employers before deductions and allowances, including cost-of-living differential, if any. Unpredictable payments for overtime work, stock options, and the like, are not included.

As shown in Table 1, paper industry engineers ranked fourth in median salaries paid in 1981, maintaining their 1980 ranking position. The 3.1% rise in salaries of paper industry engineers was one of the lowest increases among industries, however, and well below the average salary increase of 8.5%.

Compared with the 1980 survey conducted by the commission, the current survey shows salary increases for all engineers from 1980 to 1981 ranging from an ac-

Figure 2. **Annual salary of engineers in all industries since B.S. degree, 1981**



pinched by inflation in 1981

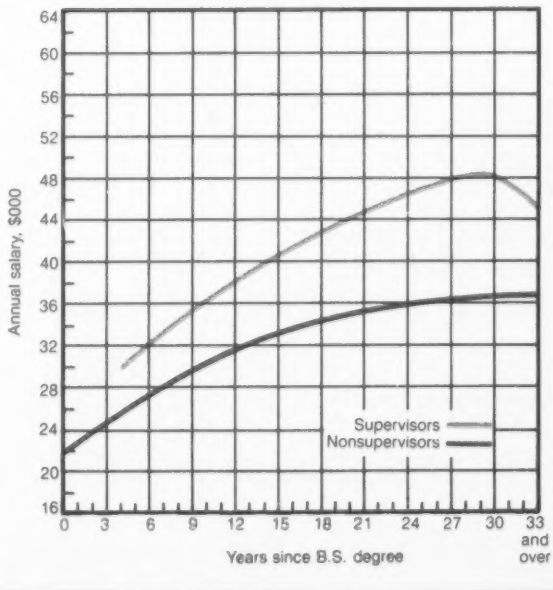
tual decline in salaries for aerospace engineers, who ranked second in the previous survey, to the 25.0% rise for engineers in research and development, who ranked ninth in the 1980 survey.

Salaries of all types of engineers in the paper industry are shown in Figure 1, which plots annual salary against the number of years after receiving a bachelor of science degree. For comparison, annual salaries of all industry enginers are plotted in Figure 2. Salaries of experienced engineers in the paper industry are up about 8% over 1980, according to the survey, while salaries for newly employed paper industry engineers are up about 3.3%, to a median starting salary of $21,700 and a high of $24,500.

On a regional basis, salaries of all engineers in the Pacific and mid-Atlantic regions were highest, followed by those in the north-central and west-south-central regions of the country.

Differences in salary exist for many reasons other than years of experience, and these factors must also be considered when comparing salaries. For example, data on all engineering categories show that engineers in supervisory positions earned considerably more than those who were in nonsupervisory positions. In the paper industry, salaries paid to all supervisory engineers average out to $41,250, while salaries paid to nonsupervisory engineers average out to $30,490, according to the survey (see Figure 3). □

Figure 3. **Median salaries of supervisory vs nonsupervisory engineers in the paper and wood products industries, 1981**



Pulp and paper industry ready to play role in U.S. drive to boost exports

But expansion in foreign markets may be stunted by growing protectionism, says API's Irene Meister, although U.S. government incentives may help

By DEBRA A. ADAMS, Assistant News Editor

☐ Export markets are becoming increasingly more important to industries such as pulp and paper because of more intense competitiveness in maturing domestic markets. American Paper Institute's international vice president, Dr. Irene W. Meister, who was appointed late last year to serve on the President's Export Council (PEC) and chairs one of its subcommittees which deals with incentives/ disincentives to trade, talked to PULP & PAPER about what the U.S. government proposes to do to open up export markets to the pulp and paper industry.

P&P: *What issues has your subcommittee worked on so far?*

Meister: The subcommittee I chair has an exceptionally broad scope for it deals with a variety of existing disincentives and searches for new incentives. We have identified seven major areas to work on and developed several resolutions, adopted by the full council. These already have been or will be shortly sent to the President. The most important one calls on the President to declare export expansion a national priority within the context of economic recovery and employment. We hope that specific programs will result from that. The U.S. share of exports worldwide fell from 18.2% in 1960 to 12.9% in 1981 and we need to restore our place in world trade.

The second resolution deals with the establishment of a special government/industry task force to determine a solution to the export financing problem—a major disincentive. Another resolution deals with domestic international sales corporations (DISCs)—an issue considerably important to the paper industry. There are several other resolutions that we are forwarding to the President.

The subcommittee on incentives/disincentives deals with various U.S. laws and regulations that hamper our exports, but also deals with numerous foreign nontariff trade barriers. We also examine such issues as reciprocity. The council's work, in broad terms, relates to our country's overall trade needs, and the paper industry is very interested in and supportive of my work.

P&P: *How crucial is export financing to the paper industry?*

Meister: Export financing is not as crucial to the paper industry as it is to other industries, except in one very important aspect. The paper industry is very dependent upon indirect exports. For example, when we have an increase in exports of other industries, we sell more boxes for shipping, and we use more white paper for export documentation. We have done some correlations between total trade and indirect exports of the paper industry and it is a very important segment of domestic sales for our industry.

A couple of years ago I estimated that indirect exports might be as high as $9 billion for the paper and allied products industry, and I think it would be higher now because overall U.S. exports have increased. So as an industry we have a very direct interest in total export trade, and when other industries cannot sell abroad due to lack of financing our domestic sales are adversely affected.

P&P: *What do you think should be done about the discrepancies in interest rates?*

Meister: My approach is to favor a long-term solution. But, in the meantime, we should not practice what I would describe as a unilateral disarmament on trade. Short term, we should provide Ex-Im Bank and other lending agencies with enough funds at competitive rates to keep the U.S. competitive.

P&P: *What do you feel are the chances for more funding for Ex-Im Bank?*

Meister: The PEC at its meeting on May 14 passed a resolution urging an immediate formation of a joint industry/government working group to determine the best means to achieve adequate export financing. We have to prove, and I think we can, that export financing will not

P&P: *What is the PEC's stand on* DISCs? *(Editor's Note:* DISCs*—or domestic international sales corporations—are formed by companies to enable them to defer indefinitely taxes on a certain portion of their export income.)*

Meister: DISCs originated in the U.S. in response to more advantageous tax provisions that other countries have been offering and continiue to offer for their exports.

As DISCs progressed through the years, their effectiveness has diminished because some of the original provisions had been taken away or greatly modified. But, it's still the best game in town.

The PEC strongly favors DISCs as long as other countries provide tax advantages. What's more, DISCs are especially important to smaller exporting companies, including smaller paper mills. The problem now is that DISCs are under attack in the General Agreement on Trade and Tariffs (GATT), and the U.S. government may be forced to come up with a GATT-compatible tax substitute for DISCs.

As of now, PEC strongly supports the present law authorizing DISCs and urges the U.S. government to defend it in GATT. Only if this defense fails, would we recommmend other alternatives which so far have not been promising.

P&P: *What is the status of negotiations concerning changing the definition of kraft paper and paperboard in the European Community?*

Meister: It's still a very hot issue for the industry. The European Commission has now endorsed the change in the definition. It is of major importance to the paper industry as well as to the U.S. government because it is believed that without the resolution of this problem, U.S. concessions granted during the multinational trade negotiations (MTN) would be "unbalanced."

The concessions that the U.S. government made during the 1978 MTN were linked to the understanding that the questions of definition for bleached and unbleached kraft paper and paperboard would be resolved. The new definition was adopted in 1978 by the Harmonized System Committee of the Customs Cooperations Council (CCC), but this new system will not go into effect for many years because it covers products of every industry.

What the U.S. government is asking, and the paper industry is urging, is that this CCC definition now be incorporated into the laws of the European Community (EC), which voted for this definition in 1978.

P&P: *What is the problem with the definition?*

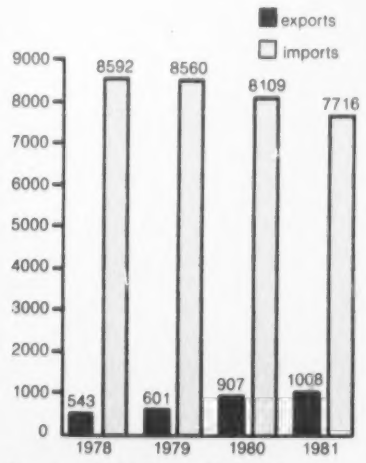
Meister: The current defintion requires that in order for a product to be designated as kraft and thus be eligible for the MTN tariff concessions, the product must contain 80% softwood. Bleached board and saturating kraft are definitely kraft products, yet the present EC definition excludes them from that category and thus a higher tariff is imposed on these products. The same is true for linerboard with less than 80% softwood content.

The new definition is much fairer, though more complex. It provides first, an umbrella definition for all kraft products including linerboard, bleached board, sack kraft, and saturating kraft. This overall definition requires that to be classified as kraft, the product must contain 80% sulfate fiber based on total fiber content. It can be either softwood or hardwood fiber.

Second, to offer greater protection—specifically, for the European producers—two additional provisions were included. For a kraft product to be classified as linerboard within the context of the unbrella definition, it must also meet a specific mullen requirement that varies depending on basis weight.

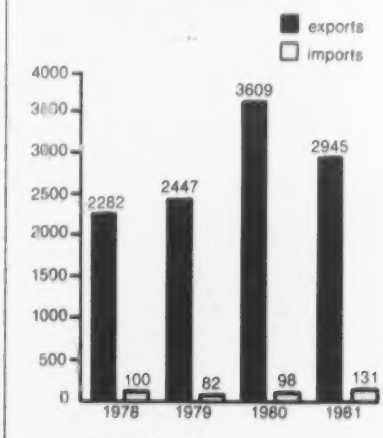
It is my belief, as well as that of the industry, that it will actually offer greater protection from the standpoint of performance requirements than offered by the present EC definition. In itself, all-softwood kraft linerboard is not a guarantee of performance. On the other hand, when you provide for mullen criteria, you already have established at least a minimum requirement of performance. It also gives Customs the tool to distinguish between kraft and testliner. Testliner has a higher duty.

Figure 1. **U.S. paper exports/ imports, 1978-81**
(000 short tons)



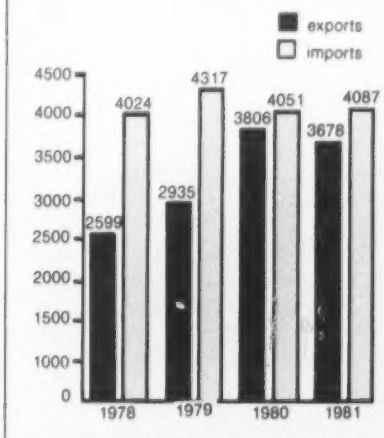
Source: American Paper Institute and U.S. Department of Commerce

Figure 2. **U.S. paperboard exports/ imports, 1978-1981**
(000 short tons)



Source: American Paper Institute and U.S. Department of Commerce

Figure 3. **U.S. woodpulp exports/ imports, 1978-1981**
(000 short tons)



Source: American Paper Institute and U.S. Department of Commerce

P&P: *Would you say the European Commission is looking seriously at this definition?*

Meister: Yes. I believe the Commission is concerned that it has not fulfilled its promise to the U.S. Unfortunately the definition has to be approved by the Council of Ministers, and so far the council has not approved it. This does not absolve the commission from its responsibilities, for as a final resort, the U.S. can retaliate on other products, but we hope it won't be necessary. At a European pulp and paper meeting in Helsinki on March 18, the EC director general said the question of definition is under intense examination.

P&P: *What is the purpose of the questionnaire on trade with Japan which was distributed by the API to its members during Paper Week?*

Meister: The U.S. government is looking into expanding trade with Japan. One industries they would like to see benefit from such expansion is pulp and paper. The U.S. government asked API to inquire whether or not the industry is handicapped in its penetration of the Japanese market, either because of tariff or nontariff barriers.

The preliminary analysis of the returns already indicates that our industry feels there are serious barriers to expanded trade with Japan. Tariffs are clearly identifiable as a barrier contributing to raising U.S. costs, but there are nontariff barriers as well.

P&P: *What is the current export-import situation between the U.S. and Japanese pulp and paper markets?*

Meister: The Japan paper industry is the second largest in production of paper and board; third largest in pulp. But their natural resources are limited and U.S. industry has a competitive advantage in many products. This is precisely the reason behind the U.S. government's questioning why a cost-competitive industry like U.S. pulp and paper is not having a greater share of the Japanese market.

Japan claims that its pulp and paper market is open. Paper and board imports in 1981 accounted for 2.9% of consumption of Japan's paper and paperboard. This is a very small percentage for an industry where costs of production are very high. Thus our government is challenging Japan's assertion that there are no serious tariff and nontariff barriers in Japan.

P&P: *Is there concern about the formation of import associations in places like Japan? (Editor's Note: The Japan Paper Importers' Assn. is one of the import associations formed so far in Japan.)*

Meister: In the U.S., the importers are interested in importing as much as they can because that's how they make their money. In Japan, the importer association's membership includes domestic producers. Thus, one wonders about the objectives of the association. Is it created to increase imports or to protect domestic manufacturers? We are asking this question.

P&P: *What is the status of the Export Trading Co. bill?*

Meister: It passed by a very large margin in the Senate and is pending in several committees in the House. The first action of the PEC was to urge the government to do everything possible to speed passage of the bill. We were sworn into the PEC in the morning on October 10 and sent a resolution to the President on this matter in the afternoon. Everyone agrees that there is a need to draw a greater number of U.S.companies into export activities, and this bill ought to help. Congressman Don Bonker, who spearheads the drive for this bill, feels that its chances have now greatly improved.

P&P: *Do you think these export trading companies will deal with particular industries, such as pulp and paper, or be set up to deal with many different industries?*

Meister: There are many ways export trading companies can be set up. There are two specific features of the bill. One authorizes banking participation in the activities of the trading companies, including equity participation. The other deals with certification by the Department of Commerce of antitrust immunity. Both provisions are especially important for smaller companies.

P&P: *What are your feelings on reciprocity legislation and the impact it could have on the pulp and paper industry?*

Meister: One of the problems I see is a lack of clear definition. Some feel it is a euphemism for protectionism. I do not think that it necessarily needs to be so.

Foreign countries have expressed very serious concerns about reciprocity legislation because there is no question that protectionism is on the rise especially among those representatives in Congress whose constituents have been hurt by imports particularly from Japan.

As a principle, reciprocity is nothing new. The whole GATT concept is based on reciprocity; all U.S. trade legislation is based on reciprocity. I would be very disturbed if reciprocity meant a sectoral approach to trade (that is, paper for paper, automobiles for automobiles, and so forth). I am convinced that the complexities of today's trading system will prevent solutions to trade problems on this so-called sectoral basis.

What we should talk about is equivalency of opportunities in the marketplace. Let's take Japan. We would like them to open up their markets for our competitive industries. I think this should be accomplished in the broadest sense of reciprocity. If Japan would be willing to persuade its citizens that there is nothing wrong with buying foreign goods and giving up some of their self-sufficiency, that might help prevent a drive for protectionist legislation in the U.S.

P&P: *Specifically, how do you feel Japan could open up its market to pulp and paper?*

Meister: There are many ways. I already mentioned one—persuading the Japanese people that near self-sufficiency should not be regarded as a goal. Japanese tariffs are still very high on paper products. Their current tariff on kraft linerboard is 12%. The reduction agreed on in 1979 will not even start until 1984 and then it will go down only two-tenths of a percent to 11.8%. The length of the transition until 1992 when the tariff finally declines to 7% does not make much sense. Japan made greater concessions on other paper grades where they are less concerned with competition, but still they are higher than could be expected from the country which is the world's second largest producer of paper and paperboard.

I have no doubt that unless Japan is willing to open its market to competitive U.S. industries in a truly meaningful way, the U.S. Congress is likely to legislate restrictions on imports to the U.S. market. Unfortunately, trade wars are no solution for no one wins. I still hope this will not be necessary, but time is running out. □

U.S. fiberboard industry is feeling effects of home-building recession

Trends are analyzed, outlook is given for three major types of wood-based fiberboard: insulating board, hardboard, and medium-density fiberboard

By LARS C. BRATT

☐ The deepening recession in the home-building industry is now having its effect on the fiberboard industry, to the extent that this industry depends on home-building as its major market. However, this extent differs considerably for various types of fiberboard.

This article examines three major types of wood-based fiberboard—insulating board, hardboard, and medium-density fiberboard—and discusses current production and consumption trends for each in the U.S. The outlook for these products is also explored in terms of new developments and capacity expansions (current and planned).

Insulating board

The term insulating board refers to a panel made from woodfiber or bagasse, having a density in the range of 20 to 30 lb/ft³. The production of such board decreased from 3.8 billion ft² (½-in. basis) in 1971 to 2.5 billion ft² in 1980 (see Table 1).

Tonnage figures are given in Table 2. Official statistics for 1981 are not yet available, but reports from individual producers indicate that production is now below 2 billion ft² (½-in.), corresponding to an average capacity utilization of 40%. Per capita annual consumption has fallen from 19 ft² in 1971 to an estimated 9 ft² at present. Several insulating board mills have been permanently shutdown or have been converted to production of mineral-base acoustical tile.

This dismal situation is not solely due to the current condition of the home-building industry, since competition from "foamboard" is becoming increasingly severe. Foamboard has a core of poly-isocyanurate surfaced on both sides with aluminum foil. According to recent inquiries, 28 foamboard plants are now operating in the U.S., with an estimated annual capacity of close to 4 billion ft² (½-in.), or more than enough to replace the entire current production of insulating board in this country.

The main advantage of foamboard over insulating board is the higher R-value (thermal resistance) of the former. A typical R-value (expressed in °F × hour × Btu⁻¹) for ½-in. foamboard is 3.6 vs 1.5 for insulating board of the same thickness. Since building authorities in the U.S. recommend a minimum R-value of 11 for side

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Table 1. **Insulating board production, imports, exports, and apparent consumption, 1970-1980**
(million ft², ½-in. basis)

Year	Production	Imports	Exports	Apparent consumption	
				Total	Ft² per capita
1970	3194	103	51	3246	16
1971	3839	115	65	3889	19
1972	3918	121	66	3973	19
1973	3914	140	79	3974	19
1974	3282	72	102	3252	15
1975	2960	36	77	2919	14
1976	3407	45	77	3375	16
1977	3462	106	84	3485	16
1978	3437	139	64	3512	16
1979	2973	129	50	3052	15
1980	2469	100	68	2501	11

Sources: USDA Forest Service, Bureau of the Census

walls, which is usually obtained by using fiberglass insulation in addition to sheathing and sheetrock, the use of foamboard in place of insulation board would permit the use of a thinner layer of fiberglass insulation.

However, according to Owens-Corning Fiberglass Corp., their standard 3½-in. fiberglass insulation, which would fit in a studwall, has an R-value of 11, making the use of asphalt-reinforced insulating board acceptable as wall sheathing. Nevertheless, as long as the price ratio for foamboard to insulation board (3:2 at present for ½-in. board) does not increase, the production of insulating The term "hardboard" refers to a hot-pressed panel made from wood fiber or bagasse, having a density in the range of 50 to 65 lb/ft³. There are actually four types of hardboard, all of which are made in the U.S.: wet-formed and wet-pressed board (smooth one side—S1S), wet-formed and dry-pressed (smooth two side—S2S), dry-formed and dry-pressed board (S2S), and dry-formed and wet-pressed board (S1S). Of the 22 hardboard plant now operating in the U.S., 10 use dry-forming techniques.

Production of hardboard in the U.S. has increased slowly during the last decade, from 5.1 billion ft² (⅛-in.) in 1971 to 5.9 billion ft² in 1980 (see Tables 2 and 3). Per capita consumption rose from 27 ft² (⅛-in.) in 1971 to 29 ft² in 1980.

Imports of hardboard have tapered off from about 1 billion ft² (⅛-in.) in 1973 to about 0.5 billion ft² in 1980, corresponding to 10% of the domestic production. A significant fraction of these imports come from Brazil. Exports remain negligible; that is, less than 0.1 billion ft² (⅛-in.) in 1980 (See Table 3).

While the hardboard industry in the U.S. is doing considerably better than the insulating board industry in terms of capacity utilization and profit, the market for standard commodity-grade hardboard is depressed, since it depends greatly on the home-building industry.

The director of the American Hardboard Assn., James Nolan, estimates that the current average capacity utilization for the hardboard industry in the U.S. is about 60%. However, the operating rates for individual mills vary greatly, from 0% to 100%, depending mainly on competitive aspects such as product quality, manufacturing cost, and marketing organization.

For example, for Superwood Corp.'s dry-process hardboard plant in Phillips, Wis., 1981 was the best year ever. In 1981 this plant was making mainly printed wall panelling. Weyerhaeuser's hardboard plant at Klamath Falls, Ore., is operating seven days a week, three shifts/day, turning out 7/16-in. hardboard siding, having a density of only 46 lb/ft³, which is actually in the range of medium-density fiberboard.

In general, mills turning out hardboard siding seem to be doing much better than average. Celotex Corp.'s mill at Paris, Tenn., is also operating at 100% capacity, producing siding only. In fact, hardboard siding is becoming the most important product of the hardboard industry.

According to figures published by the American Hardboard Assn., the volume of hardboard siding produced in the U.S. is now 50% to 60% of the total volume of hardboard produced in this country. However, some of this hardboard has such a low density that it should actually be classified as exterior-grade, medium-density fiberboard. For example, the "insulite" hardboard siding produced at Boise Cascade's International Falls, Minn., mill, has a density of only 40 lb/ft³ and a thickness of 7/16-in. This board is made with the wet process, impregnated with a high percentage of Gilsonite, a binder obtained from coal, and then dried in an insulating board dryer before being hot-pressed to the desired density. A similar siding is being produced by Abitibi-Price Corp. at Roaring River, N.C. The Catawba, S.C., Champion Building Products plant has also specialized in making only hardboard siding. This product is made with the dry process, using phenol-formaldehyde resin as the main binder, and has a density of 50 lb/ft³.

In general, the dry-process hardboard plant seem to be doing somewhat better than the wet-process plant in the current depressed market, in spite of the higher resin cost of dry process board. Georgia-Pacific's plant at Conway, S.C., making dry-process S2S board, managed to boost production to 110% of capacity throughout 1981. Champion Building Product's plant at Lebanon, Ore., and Superwood's plant at Bemedji, Minn., both operated near capacity in 1981, using the dry process.

No new hardboard plant has been built in the U.S. during the last decade. Worldwide, no new dry-process hardboard plants have been built since 1978. Sunds Defibrator engineered a new wet-process hardboard plant in Thailand, which started up in 1981. Sunds also contributed to the design/construction of a new wet-process hardboard plant for Duratex in Brazil. This plant has a

Table 2. **Trends in production and consumption of hardboard and insulating board in U.S.A., 1970-1980**
(thousands of short tons)

	Production		Imports		Exports		Apparent consumption	
Year	Hardboard	Insulating board	Hardboard	Insulating board	Hardboard	Insulating board	Hardboard	Insulating board
1970	1463	1219	152	39	26	19	1590	1239
1971	1718	1446	211	43	28	25	1901	1465
1972	1908	1529	357	47	34	26	2230	1550
1973	2001	1547	346	55	43	31	2304	1571
1974	1978	1295	250	28	59	40	2169	1283
1975	1784	1249	92	15	55	32	1821	1232
1976	2110	1434	169	19	66	32	2214	1421
1977	2237	1403	211	43	59	34	2388	1412
1978	2416	1425	296	58	26	27	2687	1456
1979	2306	1136	261	53	32	21	2535	1168
1980	1970	949	172	38	29	26	2113	961

Sources: USDA Forest Service, USDC Bureau of the Census

200-tpy capacity, and was scheduled to go on-stream in May. The Duratex plant is using a single-stage, pressurized refiner with digester, which is able to process the entire input of eucalyptus chips. Such a refiner requires 2250 kw, or more than 3000 hp, to operate at capacity.

New hardboard developments

Major developments in hardboard technology seem few and far between, perhaps because this industry has already succeeded in manufacturing a product of satisfactory and constant quality at low cost with few operating problems. However, Superior Fiber Products, Superior, Wis., appears to have recently made a major contribution to wet-process hardboard technology. This company has developed a successful closed system for the water used in manufacturing, without experiencing a decline in board quality.

It has also been reported that the hardboard siding mill of Abitibi-Price Corp., Roaring River, N.C., is equipped with a closed system for its effluents, but the local management has declined to provide any technical information. Since disposal of effluents from a wet-process hardboard plant is usually a serious and costly problem, the development of a satisfactory closed system for handling such effluents must be considered a major contribution to hardboard technology.

The technology used for making dry-process hardboard at Louisiana-Pacific's Oroville, Calif., plant, deserves to be mentioned in this context, since it makes use of a continuous press; that is, a circular press similar to the press used in the Mende process for making thin particleboard. The staff at Oroville adapted this press to hardboard manufacture and has been operating successfully since 1974.

With this method, chips are processed through a standard Defibrator digester attached to a 36-in. Asplund refiner. The fibers are dried in two flash-tube dryers, using hot air heated by passing over steam radiators. Urea-formaldehyde resin is added in the blender ahead of the dry former. The resin-impregnated fiber mat is then cured by passing around a heated steel drum, 10 ft in dia. The mat is pressed against the heated drum by an endless steel belt which, in turn, is pressed against the big drum by means of two smaller oil-heated steel drums, 4 ft in dia.

The S2S board produced in this manner has a density of 46 to 50 lb/ft³ depending on thickness, which ranges from 0.1 to 0.25 in. Forming speed varies from 50 fpm, when making 0.1-in. board, to 25 fpm when making 0.25-in. board. This board has been well-received in the hardboard market, since it is stronger than thin particleboard and has two very smooth surfaces, suitable for printing or plastic overlays.

An important, promising new hardboard product has been developed by Masonite Corp. in the form of an embossed roof shingle made by hotpressing a moist fiber mat between engraved press platens. The shingle is sold under the tradename of "Woodruf." It looks much like a cedar shingle or shake and is priced about the same. The Woodruf shingle can be made fire-resistant by a special process to obtain a Class C fire rating, the same as for asphalt shingles. But, the price of the treated shingle is much higher than that of the untreated shingle.

Medium-density fiberboard

The term "medium-density fiberboard" (MDF) refers to a wood-based, dry-process fiberboard having a density in the range of 40 to 48 lb/ft³. Nowadays, medium-density fiberboard seems like a rather obvious development; that is, if a good quality hardboard can be made with the dry process, the same or at least a similar process could logically be used to make a lighter and thicker board, to compete with particleboard.

However, in 1966, when the first MDF plant came on stream in Deposit, N.Y., it did not appear to be such a promising development. The manager of particleboard production for one of the largest forest product companies in the U.S. declared it to be a "stillborn" idea, which would never be of any commercial importance. Twelve years later, in 1978, MDF production in the U.S. exceeded 0.5 billion ft² (¾-in.), corresponding to 14% of the particleboard production in this country (see Table 4). During the three-year period from 1975 to 1978, MDF production grew at an average annual compound rate of 36%, compared with 15% for particleboard during this period.

Anything particleboard can do MDF can do, but not vice versa. MDF can be machine-edged with ease, embossed, engraved, and contoured, and is more profitable to make. It sells at a premium of $100 to $125/1000 ft² (¾-in.) over the price of particleboard made for the same usage. This premium is despite the fact that MDF can be made from a cheaper raw material (like mixed hardwoods, which are normally unsuitable for particleboard).

In terms of operating rate, or capacity utilization, the producers of MDF board are doing much better than most producers of hardboard, not to mention insulating board. The average annual operating rate in 1980 for the 11 MDF plans in this country was 80%. Since the main market for MDF board is furniture manufacture, MDF producers have not been as adversely affected by the depressed home-building industry as have producers of other fiber-

Table 3. **Hardboard production, imports, exports, and apparent consumption, 1970-1980**
(million ft², ⅛-in. basis)

Year	Production	Imports	Exports	Apparent consumption Total	Apparent consumption Ft² per capita
1970	4340	452	77	4715	23
1971	5126	631	83	5674	27
1972	5671	1060	103	6629	32
1973	6049	1047	131	6965	33
1974	5845	739	175	6409	30
1975	5093	264	158	5198	24
1976	6016	482	187	6310	29
1977	6567	618	174	7011	32
1978	7376	903	78	8200	37
1979	7304	803	99	8008	36
1980	5899	545	92	6352	29

Sources: USDA Forest Service, Bureau of the Census

board grades. But in the long term, the decline in new home production in the U.S. will undoubtedly cause a substantial decline in the demand for furniture. However, since much of the current demand for MDF is caused by replacement of particleboard with MDF, producers of MDF are likely to continue to prosper even under current economic conditions, at the expense of particleboard producers.

There have been no new MDF plants built in the U.S. since 1975. However, two new plants are in the planning stage. Duraflake is planning to convert an old particleboard plant located in Malvern, Ark., into a modern MDF plant, as soon as suitable financing can be arranged. Frontier Fiber is planning to build an MDF plant at Las Vegas, N.M., financed by Public Service of New Mexico.

The superior properties of MDF have also stimulated interest in MDF production abroad. Medford Corp. is building a new MDF plant in Ireland, and Sunds Defibrator has engineered new MDF plants in Italy, Austria, Spain, Tunisia, and South Africa. Siempelkamp has built a new MDF plant in Turkey. One informed source claims that MDF productin in Western Europe now amounts to about 275 million ft² (¾-in.), corresponding to only 2% of the particleboard production there, compared with 16% in the U.S.

MDF technology

Technology of MDF manufacture apparently has not changed much in recent years, although high-frequency (radio frequency) heating of the board seems to be on its way out, perhaps mainly due to the current high cost of electric energy. Of the 11 plants now producing MDF in the U.S., 5 are not equipped with RF heating, but have increased the press size so as to compensate for the longer curing time required. An MDF plant recently built in Italy is equipped with a new type of continuous board press, made by Kusters of Krefeld, W. Germany.

An interindustry controversy seems to be going on concerning the best method for adding urea-formaldehyde resin to MDF. One producer, who is adding the resin to the dry fiber going on conveyors from the dryers to the blender, claims that blowline addition of the resin, while the fiber is blown from the refiner to the dryer, can result in the presence of free formaldehyde in the finished board. This claim is backed up by the staff of Borden Chemical Co. at Eugene, Ore. However, the interviewed producers of MDF board who do use blowline addition of the UF resin claim to have had no customer complaints over formaldehyde fumes. □

Table 4. **Comparison of MDF and particleboard production in the U.S.A. 1975-1980**
(million ft², ¾-in. basis)

Year	Medium-density fiberboard	Particleboard	MDF as percent of particleboard
1975	216	2539	8.5
1976	280	3202	8.7
1977	441	3593	12.3
1978	539	3866	13.9
1979	534	3536	15.1
1980	513	3029	16.9

Source: National Particleboard Association

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Sodium sulfate markets remain flat in '82

By BARRY SHOCKETT

The general economic malaise has resulted in little growth in U.S. sodium sulfate (saltcake) consumption over the last two years. In fact, consumption has been down since 1978, when it reached the 1,300,000-ton level.

Domestic markets for sodium sulfate in Canada have not been that strong either over the last four years, with the only bright spot a substantial growth in exports, most to the U.S. Exports increased about 27% in 1980, almost 15% in 1981, and should increase 16.5% in 1982.

U.S. sodium sulfate statistics (000 short tons)

	1979	1980	1981	1982e
Capacity				
Natural	650	650	650	500
Synthetic, byproduct	600	600	600	600
Production				
Natural	533	583	608	480
Synthetic	588	536	536	535
Imports	188	230	275	360
Exports	102	129	124	115
Apparent consumption	1235	1236	1262	1260
Pulp and paper	667	593	612	611
Detergents	395	482	492	491.5
Other, glass and misc.	173	161	158	157.5

Source: Bureau of Mines, U.S. Dept. of the Interior

Canadian sodium sulfate statistics (000 short tons)

	1979	1980	1981	1982e
Capacity*	921.5	951	940	944.5
Production	591	653.5	695	749.5
Imports	22	22.3	13.7	11
Exports	212.7	271	313.5	366
Apparent consumption	400.3	404.8**	395.2	394.5
Pulping	328	327.5	319.7	315
Detergents	48.5	50.2	50.7	51.3
Other	23.7	23.7	24.8	28

* includes 85-tpy byproduct capacity
** including inventory buildup

SODIUM SULFATE

UNITED STATES

Uses: Saltcake is the main source of makeup sodium and sulfur for kraft pulp mills. Sodium sulfate is also used by the detergent industry, for glassmaking and others.

Demand: In 1981, pulp mills used about 48.5% of total Na_2SO_4 consumption. 1982 pulp mill demand is estimated to be 611,000 tons, close to 1981 levels. Since 1979, Na_2SO_4 used in detergents has increased from 32% to 39% of total consumption, and this market accounted for 492,000 tons in 1981. In 1981, 275,000 tons were imported (22%) and is estimated to increase to 28% in 1982.

Sources: There are two sources for saltcake: natural and synthetic (or byproduct). Natural Na_2SO_4 capacity has decreased to 45.5% of total capacity recently. Major producers are: natural—Kerr-McGee, Great Salt Lake, and Ozark-Mahoning; synthetic—Allied, Akzona, Morton, Diamond Shamrock, Autex, Climax Chemical, Courtlaulds, and others.

Availability: Continuing weak demand coupled with increased imports should maintain an adequate supply. 1981, market; 1980, tight to market; 1979, market to tight.

Pricing: There have been no announcements of U.S. price increases since last July, when the list price rose to $79/ton on the West Coast and $81/ton in the South. However, since then Canadian shipments across the border went up $5/ton, on April 1, 1982, to C$76/ton, f.o.b. producing points. Price history: 1981, $68-$79/ton; 1980, $60-$68/ton; 1979, $47-$52/ton.

Forecast: In the longer term, pulp mill usage is expected to decrease gradually, depending on the extent to which chlorine is replaced by chlorine dioxide for bleaching. Total demand could increase as much as 2% to 3% over the next couple of years. However, a recent Bureau of Mines study predicts an average decrease of 1.5% per annum to the end of the decade.

CANADA

Uses: Kraft pulp mills are the largest consumer of sodium sulfate, followed by the detergent industry and various small end uses.

Demand: Canadian pulp mills used about 320,000 tons in 1981, or 80% of total demand. This is down from 1980 levels due to strikes. Weakness in market pulp markets will reduce mill consumption again in 1982, to 315,000 tons. The next largest end use, by synthetic detergent producers, used an estimated 50,700 tons in 1981.

Sources: There are five producers in Canada: Saskatchewan Minerals, Francana Minerals, Alberta Sulphate, Midwest Chemicals, and Ormiston Mining and Smelting produce natural saltcake. Courtlands and Ontario Paper produce byproduct sulfate.

Availability: Nameplate capacity is sufficient to handle demand on both sides of the border for the foreseeable future. 1981, market; 1980, market; 1979, market.

Pricing: The price of saltcake was increased to $75/ton, f.o.b. producing points, on April 1, 1982, a rise of $5/ton. In 1981, there were two price hikes totalling $15/ton. Price history: 1981, $55-$70/ton; 1980, $50-$55/ton; 1979, $50/ton.

Forecast: Production is expected to increase again in 1982, mainly as a result of more exports to the U.S. Pulp mill usage will continue to decrease. However, the new end use area (solar heat sinks) is expected to grow substantially.